1.0 BACKGROUND

ConocoPhillips Refining Company (ConocoPhillips) submitted this application for the following:

- **To obtain contemporaneous emission offsets of SO_2 from S2 (K-2 Kiln Burner; abated by A2 Pyroscrubber and A11 Baghouse) for Plant 16, Clean Fuels Expansion Project**

- **To obtain PM_{10} actual emission offsets from S2 (K-2 Kiln Burner; abated by A2 Pyroscrubber and A11 Baghouse) for California Environmental Quality Act (CEQA) purposes for Plant 16, Clean Fuels Expansion Project**

- **To request changes to permit condition 136 to include new SO_2 and PM_{10} emission limits for S2**

ConocoPhillips has previously submitted an Authority to Construct (ATC) and a Prevention of Significant Deterioration application (BAAQMD application number 13424) for the Clean Fuels Expansion Project (CFEP) at its Rodeo Refinery (Plant 16). To offset emission increases from the CFEP, ConocoPhillips has submitted this application for contemporaneous offsets of sulfur dioxide (SO_2) and actual emission offsets of particulate matter (PM_{10}) for CEQA purposes at its Contra Costa Carbon Plant (Plant 22). This application proposes to reduce emissions of SO_2 through increased sodium bicarbonate injection in the gas stream prior to the baghouse system controlling the K-2 Coke Calcine Kiln (S2) and PM_{10} emission reductions through the installation of new bag technology at the K-2 Baghouse (A11).

Contra Costa County, the CEQA lead agency for the CFEP, does not recognize banked offsets for the purposes of CEQA.

The proposed reductions are scheduled to be implemented prior to start-up of the proposed CFEP.

Request for changes to permit condition 136 to include new SO2 emission limit will be classified as a "Significant" revision per District Regulation 2-6-226.4 because the facility is avoiding the requirement for PSD Modeling for SO_2 that is required pursuant to Regulation 2-2-222.

2.0 EMISSIONS SUMMARY

<u>SO_2 Emissions</u>

S2, K-2 Kiln, is required by Permit Condition 136 Part 3 to operate and maintain a continuous emission monitoring system to quantify:

- The concentration of sulfur dioxide inside each kiln's exhaust stack;

- The flow rate of combustion products from each exhaust stack; and

- The mass emission rate of sulfur dioxide from each exhaust stack into the atmosphere.

Using stack monitoring data for a 3-year baseline period (5/01/03 to 4/30/06) as required by District Regulation 2-2-605, the SO_2 total mass emissions averaged 791.32 tons per year for the K-2 Kiln. Please refer to Attachment 1 for emission details. The project proposes to increase injection of sodium bicarbonate in the gas stream prior to the K-2 Baghouse leading to a reduction of 42 tons per year, thus limiting emissions to 749.32 tons per year. The reduction will be demonstrated by monitoring stack SO_2 emissions and flow rate, and calculating the achieved mass emission rate.

PM_{10} Emissions

ConocoPhillips is also proposing to upgrade the filtration device in the baghouse, which will result in a PM_{10} emissions reduction. Technical information on the new baghouse technology is included in the application folder. The information indicates that the proposed filter bag uses a micro-porous Membrane to enhance airflows, reduce media drag and enhance ash release. Per the information and data provided by the applicant, these filter bags are generally 99.995% efficient at one micron or larger.

For a 3-year baseline period (8/01/2003 to 7/30/2006) as required by District Regulation 2-2-605, the PM_{10} total mass emissions averaged 37.4 tons per year for K-2 Kiln. This data came from three source tests that were conducted in 2004, 2005 and 2006. Please refer to Attachment 2 for emission details including source test results. The proposed upgrade in baghouse technology will lead to a reduction of 7.5 tons per year thus limiting emissions to 29.9 tons per year. The reduction will be demonstrated through annual source testing required by Permit Condition 136 Part 10b.

Table 1 below summarizes the resultant emission reductions from the proposed modifications:

Table 1: Summary of Proposed Emission Reductions at K-2 Kiln

Pollutant (tons/yr)	PM_{10}	SO_2
Current Baseline Emissions (3 years)	37.4	791.32
Proposed Reduction	-7.50	-42
Proposed Emission Limits	29.90	749.32

Note: PM10 emissions estimated assuming for each kiln 2.5 hours per day are spent soot blowing/cleaning using the Cleaning emission factor. The other 21.5 hours per day calculated using the Normal Operation emission factor.

2.1 Plant Cumulative Increase

The cumulative emission increase is zero for all the criteria pollutants because annual emissions for this plant are not increasing due to this application.

2.2 Best Available Control Technology

In accordance with BAAQMD Rule 2-1-301, any person who "puts in place, builds, erects, installs, modifies, modernizes, alters, or replaces any article, machine, equipment or other contrivance, the use of which may cause, reduce, or control the emissions of air contaminants" shall first obtain an ATC from BAAQMD. In addition, any person who "uses or operates any article, machine, equipment or other contrivance, the use of which may cause, reduce or control the emissions of air contaminants" shall first obtain a PTO. BAAQMD Rule 2-1-106 allows for proposed modifications on abatement devices to be exempt from the ATC requirements of Rule 2-1-301. Consequently, the proposed increase of sodium bicarbonate injection and the modifications at the K-2 Baghouse are exempt from the ATC requirements of Rule 2-1-301.

BACT requirements specified in BAAQMD Rule 2-2 (New Source Review) apply to projects that are subject to Rule 2-1-301 (ATC). Because the proposed modifications at the baghouse are exempt from the ATC requirements per Rule 2-1-106, BACT requirements do not apply to the K-2 Baghouse.

2.3 Toxics

New source review of Toxic Air Contaminants (BAAQMD Rule 2-5) requires the Best Available Control Technology for Toxics (TBACT) for sources that result in cancer risk greater than 1.0 in one million and/or chronic hazard index greater than 0.20. The proposed changes to the Carbon Plant would not result in an increase in toxic emissions, thus the New Source Review of Toxic Air Contaminants does not apply.

2.4 Offsets

Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NOx. The District may provide offsets from the Small Facility Banking Account for a facility with emissions between 10 and 35 tons/yr of POC or NOx, provided that the facility has no available offsets. Since there is no increase in emissions at this plant as mentioned in Section 2.0 above, offsets are not required for this application.

This application will provide contemporaneous emission offsets of SO_2 and actual emission offsets of PM_{10} for CEQA purposes for CFEP Application 13424 that has been submitted for Rodeo Refinery (Plant 16).

The Emission Reduction Credits (ERCs) calculations of SO_2 were performed in accordance with the procedures outlined in Reg. 2-2-605. ERCs are calculated based on stack monitoring data for a 3-year baseline period (5/01/03 to 4/30/06).

The SO_2 offsets do not require a RACT reduction in accordance with BAAQMD Regulations 2-2-201 and 2-2-243 because RACT is defined as the limit in Regulation 9-1-310.2 of 400 ppmv SO_2 or 250 lb SO_2/hr, whichever is most restrictive, and the source meets these limits. Compliance with RACT has been verified through use of the SO_2 Continuous Emissions Monitoring (CEM) data.

This application is in compliance with Reg. 2-2-214, Emission Offsets, as SO_2 ERCs are coming from contemporaneous emission offsets from an existing source, S2.

3.0 STATEMENTS OF COMPLIANCE

Major Facility Review

The ConocoPhillips Contra Costa Carbon Plant has a Major Facility Review permit as required by BAAQMD Rule 2-6 since it is considered a major source of emissions. ConocoPhillips is proposing to add two new limits to the existing Major Facility Review Permit and monitoring and recordkeeping to verify compliance with the proposed emissions reductions. Because PM_{10} reductions are voluntary and not required by any Federal, State, or Local rule, proposed PM10 permit condition will not be federally enforceable. The District agrees with this determination as per guidance provided by the District Assistant Counsel, Kathleen Walsh. Therefore, CEQA will be the basis for this new PM_{10} emission limit permit condition. This will make the new PM_{10} permit condition non-federally enforceable.

SO2 emission limit will be federally enforceable.

The reduction in SO_2 would be enforced by limiting the mass emissions to 749.32 tons on an annual average basis. ConocoPhillips will continue to be limited by BAAQMD Reg. 9-1-310.2, which states: "A person shall not emit, from any coke calcining kiln, effluent process gas containing sulfur dioxide in excess of 400 ppm by volume or in excess of 113 kg (250 pounds) per hour, whichever is more restrictive. The following permit language that will be included in Permit Condition 136 is proposed to make the 42-ton per year reduction in SO_2 emissions a federally enforceable condition:

The owner/operator shall ensure that SO2 emissions from S2 do not exceed 749.32 tons in any consecutive 12-month period. [Basis: Reg. 2-2-303, Offsets]

The reduction in PM_{10} will be enforced by limiting emissions to 29.9 tons per year on an annual average basis. ConocoPhillips will continue to be limited by BAAQMD Regulations 6-301 and 6-311, which limit particulate concentration and mass emissions. The following permit language that will be included in Permit Condition 136 is proposed to make the 7.5-ton per year reduction in PM10 emissions an enforceable condition:

The owner/operator shall ensure that PM10 emissions from S2 do not exceed 29.90 tons in any consecutive 12-month period. The emissions shall be calculated assuming that S2 operates normally for 21.5 hours per day and soot blowing and/or baghouse cleaning occurs for 2.5 hours per day. Normal operating emissions shall be estimated using the emissions from the most recent Condition 136 Part 10b source test. Soot blowing/baghouse cleaning emissions shall be based on an emission rate of 1.412 lb PM10 per ton of coke processed. [Basis: CEQA]

The California Environmental Quality Act (CEQA)

The Clean Fuels Expansion Project is undergoing CEQA review. Contra Costa County is the lead agency.

Prevention of Significant Deterioration (PSD)

The contemporaneous offsets for SO_2 have been included in ConocoPhillips' Clean Fuels Expansion and Hydrogen Plant Projects PSD Permit Application 13424.

The upgraded baghouse technology is exempt from PSD requirements because it will not increase emissions, and therefore not exceed any of the thresholds listed in BAAQMD Rule 2-2-304 through 2-2-306 or 40 CFR 52.21.

Public Notification

This facility is over 1,000 feet from the nearest school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

PSD notification will be issued for the CFEP application number 13424.

Other Prohibitory Rules

The K-2 Kiln is subject to BAAQMD Regulations 1 (General Provisions), 6 (Particulate Matter and Visible Emissions), and 9-1 (Inorganic Gaseous Pollutants-Sulfur Dioxide). After the proposed project is completed, the K-2 Kiln will continue to satisfy the applicable requirements.

NSPS and NESHAPS do not apply.

4.0 PERMIT CONDITIONS

Current permit condition 136 applicable to sources S1 and S2 will be modified as follows to include new SO_2 and PM_{10} emission limits for S2, K-2 Kiln:

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COND#  136  ------------------------------------

     Condition #136
     For: S-1 K-1 Coke Calcine Kiln/Cooler
          S-2 K-2 Coke Calcine Kiln/Cooler

     1. All pyroscrubber access ports shall be closed during
        source tests to determine compliance with District
        regulations and/or permit conditions.
        (Basis: Reg 1-401)

     2. APCO approved sampling ports and access platforms
        shall be provided downstream of each baghouse.
        (Basis: Reg 1-501)

     3a. The permit holder shall operate and maintain a
         continuous emission monitoring system to quantify:

         a. the concentration of sulfur dioxide inside each
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kiln's exhaust stack, and
b. the flowrate of combustion products from each exhaust stack, and
c. the mass emission rate of sulfur dioxide from each exhaust stack into the atmosphere.
(Basis: Reg 1-521 and 522)

3b. The permit holder shall use gas flow meters to record the flow of natural gas to the kilns and pyroscrubbers. (Basis: Regulation 2-6-503)

4. The continuous emission monitoring system shall meet the requirements of the Manual of Procedures, Volume V, Continuous Emission Monitoring Policy and Procedures (Basis: Reg 1-522)

5. The owner/operator shall ensure that SO_2 emissions from S-2 do not exceed 749.32 tons in any consecutive 12-month period. [Basis: Regulation 2-2-303, Offsets]

~~5~~6.~~—~~In order to demonstrate compliance with the parts 3, 4 and ~~4~~5 of this condition, the following records shall be maintained in a District approved log. These records shall be kept on site and made available for District inspection for a period of 5 years from the date on which a record is made:

a. the concentration of sulfur dioxide inside each kiln's exhaust stack, as prescribed in part 3 of this condition.
b. the mass emission rate of sulfur dioxide from each exhaust stack into the atmosphere, as prescribed in part 3 of this condition.
c. Amount of natural gas burned on a monthly basis (therms/month).
d. Continuous emission monitoring measurements for sulfur dioxide.
e. Date, time, and duration of any startup, shutdown, or malfunction of any kiln, emission control equipment, or emission monitoring equipment.
f. Results of performance testing, evaluations, calibrations, checks, adjustments, and maintenance of any CEMs.
g. Hourly sulfur dioxide concentration and emission rate
h. Annual sulfur dioxide emission rate in tons at S-2 to ensure compliance with part 5 of this condition.

~~h~~i. Hourly flow rate of combustion products (basis: Reg 1-441, Reg. 2-2-303, Offsets)

*~~6~~7. The permit holder shall keep the Baghouses, A-10 and A-11 in good operating condition. (basis: Regulation 6-301)

~~7~~8. All particulate matter emissions from S-1 and S-2 shall be routed to the baghouses A-10 and A-11, respectively. (basis: Regulation 6-301, 6-310, 6-311)

9. The owner/operator shall ensure that PM_{10} emissions from S-2 do not exceed 29.90 tons in any consecutive 12-month period. The emissions shall be calculated assuming that S-2 operates normally for 21.5 hours per day and soot blowing and/or baghouse cleaning occurs for 2.5 hours per day. Normal operating emissions shall be estimated using the emissions from the most recent Condition 136 Part 12b source test. Soot blowing/baghouse cleaning emissions shall be based on an emission rate of 1.412 lb PM10 per ton of coke processed. [Basis: CEQA]

~~8~~10. Within 3 months of final issuance of the Major Facility Review permit, the permit holder shall install a District approved manometer or other District approved device which measures the pressure drop across each baghouse. Within 6 months of final issuance of the Major Facility Review permit, the permit holder shall determine the proper pressure drop range for each baghouse. These ranges shall be submitted to the Permits Division of the District for inclusion in the permit as an administrative permit amendment. (basis: Regulation 2-6-409.2)

~~9~~11. After installation of the manometer or devices, the manometer or device shall be operational at all times that the above sources are operated. The pressure drop across the baghouses shall be recorded once a week to ascertain that the pressure drops are in the normal operating range, and the baghouses are in good operating condition. The records shall be kept on site for at least five years from the date of data entry and be made available to the District staff for inspection. (basis: Regulation 2-6-409.2 and 2-6-501)

~~10~~12. a. Visible particulate emissions from S-1 and S-2 shall be monitored quarterly using the District method (Manual of Procedures, Volume I, Evaluation of Visible Emissions) and shall be retained on site for a minimum period of five years from the date of data entry and be made available to the District staff for inspection.
(basis: Regulation 6-301, Regulation 2-6-501)

b. The owner/operator of S1 and S2 shall conduct an annual District-approved source test at each furnace in order to demonstrate compliance with Regulation 6-310, 6-310.3 and 6-311. The results of these tests shall be kept on site for at least five years from the date of the test and be made available to District staff upon request.
(basis: Regulation 2-6-501)

~~11~~13. Each baghouse shall be inspected on an annual basis to ensure proper operation. Records of each annual inspection shall be kept on site for at least five years from the date of data entry and be made available to the District staff for inspection.
(basis: Regulation 2-6-501)

~~12~~14. Natural gas usage and calcined petroleum coke produced shall not exceed the following in any consecutive 12-month period:

a. For S-1:
Natural gas usage at the S-1 burner: 5.25 million therms
Natural gas usage at the A-1 burner: 2.6 million therms
Calcined petroleum coke produced: 262,800 tons

b. For S-2:
Natural gas usage at the S1 burner: 5.00 million therms
Natural gas usage at the A1 burner: 2.6 million therms
Calcined petroleum coke produced: 262,800 tons
(basis: Regulation 2-1-234.3)

~~13~~15. The permit holder shall maintain the following records for each limit listed in parts 9 and ~~12~~14:

a. Monthly natural gas usage per burner and per source
b. Monthly calcined petroleum coke produced per source

c. Total natural gas usage per burner and per source for the preceding 12 months
d. Total calcined petroleum coke produced per source for the preceding 12 months
e. Annual PM10 emission rate in tons at S-2 to ensure compliance with part 9 of this condition.
(basis: Regulation 1-441, CEQA)

~~14~~16. The permit holder shall make available to the APCO, upon request, any records relating to hourly or daily fuel usage or coke throughput.
(basis: Regulation 1-441)

5.0 RECOMMENDATION

Staff recommends the following:

a) District grants contemporaneous emission offsets of SO_2 in the amount of 42 tons per year from S2 (K-2 Kiln Burner; abated by A2 Pyroscrubber and A11 Baghouse) for Plant 16, Clean Fuels Expansion Project

b) District grants actual emission offsets of PM_{10} in the amount of 7.50 tons per year from S2 (K-2 Kiln Burner; abated by A2 Pyroscrubber and A11 Baghouse) for Plant 16, Clean Fuels Expansion Project

c) District approves changes to permit condition 136 to include new SO_2 and PM_{10} emission limits for S2, K-2 Kiln Burner.

By: _____
Sanjeev Kamboj
Air Quality Engineer II

Date: _____

ATTACHMENT 1

Three-Year Baseline Emission for SO_2 from the Carbon Plant

ATTACHMENT 2

Three-Year Baseline Emission for PM_{10} from the Carbon Plant